

EAST Search History

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	15750880	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 08:43
S2	25702	S1 and "711"/\$.ccls.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/29 16:16
S3	25	S2 and (ram same (ddr and (emulat\$7 protocol)))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/29 17:05
S4	86596	S1 and (memory with (device and interface))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 10:53
S5	63	S1 and (((memory adj5 module) with interface) same (ram and dram))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:08
S7	2	"20030050087"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 08:09
S8	15751267	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 10:54
S9	74	S8 and (memory and (translat\$5 map\$9) same (ddr and ram))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 16:24
S13	180	S8 and ((memory with ((mobile portable) and (device module))) same (dram and ram))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/03 15:00
S14	5	S13 and ((dram and interface) same (non-volatile (non adj1 volatile)))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 12:15
S16	2	S13 and ((ddr and (ram)) with (interfac\$9 translat\$9 convert\$9))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 12:19

**256Mb: x4, x8, x16 SDRAM
Features**

Synchronous DRAM

MT48LC64M4A2 – 16 Meg x 4 x 4 banks

MT48LC32M8A2 – 8 Meg x 8 x 4 banks

MT48LC16M16A2 – 4 Meg x 16 x 4 banks

For the latest data sheet, refer to Micron's Web site: www.micron.com

Features

- PC100-, and PC133-compliant
- Fully synchronous; all signals registered on positive edge of system clock
- Internal pipelined operation; column address can be changed every clock cycle
- Internal banks for hiding row access/precharge
- Programmable burst lengths: 1, 2, 4, 8, or full page
- Auto precharge, includes concurrent auto precharge, and auto refresh modes
- Self refresh mode
- 64ms, 8,192-cycle refresh
- LVTTTL-compatible inputs and outputs
- Single +3.3V ±0.3V power supply

Table 1: Address Table

Parameter	16 Meg x 4	8 Meg x 8	4 Meg x 16
Configuration	16 Meg x 4 x 4 banks	8 Meg x 8 x 4 banks	4 Meg x 16 x 4 banks
Refresh count	8K	8K	8K
Row addressing	8K (A0–A12)	8K (A0–A12)	8K (A0–A12)
Bank addressing	4 (BA0, BA1)	4 (BA0, BA1)	4 (BA0, BA1)
Column addressing	2K (A0–A9, A11)	1K (A0–A9)	512 (A0–A8)

Table 2: Key Timing Parameters

CL = CAS (READ) latency

Speed Grade	Clock Frequency	Access Time		Setup Time	Hold Time
		CL = 2	CL = 3		
-6A	167 MHz	–	5.4ns	1.5ns	0.8ns
-7E	143 MHz	–	5.4ns	1.5ns	0.8ns
-75	133 MHz	–	5.4ns	1.5ns	0.8ns
-7E	133 MHz	5.4ns	–	1.5ns	0.8ns
-75	100 MHz	6ns	–	1.5ns	0.8ns

Part Number Example:

MT48LC16M16A2TG-75:D

Options

- Configurations
 - 64 Meg x 4 (16 Meg x 4 x 4 banks)
 - 32 Meg x 8 (8 Meg x 8 x 4 banks)
 - 16 Meg x 16 (4 Meg x 16 x 4 banks)
- Write recovery (¹WR)
 - ¹WR = "2 CLK"¹
- Plastic package – OCPL²
 - 54-pin TSOP II OCPL² (400 mil) (standard)
 - 54-pin TSOP II OCPL² (400 mil) (lead-free)
 - 60-ball FBGA (x4, x8)
 - 54-ball VFBGA (x16)
 - 60-ball FBGA (x4, x8) (lead-free)
 - 54-ball VFBGA (x16) (lead-free)
- Timing (cycle time)
 - 6.0ns @ CL = 3 (x8, x16 only)
 - 7.5ns @ CL = 3 (PC133)
 - 7.5ns @ CL = 2 (PC133)
- Self refresh
 - Standard
 - Low power
- Operating temperature range
 - Commercial (0°C to +70°C)
 - Industrial (–40°C to +85°C)
- Design revision

Marking

64M4
32M8
16M16

A2

TG
P
FB
FG
BB
BG

-6A
-75
-7E

None
L

None
IT
:D

Notes: 1. Refer to Micron technical note: TN-48-05.
2. Off-center parting line.

EAST Search History

S17	1	S13 and ((ddr and flash) with (interfac\$9 translat\$9 convert\$9))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 12:20
S18	16	S13 and ((dram and flash) same (interfac\$9 translat\$9 convert\$9))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 12:25
S19	19	S13 and ((dram and ram) same (interfac\$9 translat\$9 convert\$9))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 12:40
S20	5	"2004001560"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 12:41
S22	2	"20040015670"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 12:42
S23	11	S8 and ((interface near5 module) same (ram and dram and ddr))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 12:50
S24	12	("4276594" "4447881" "5113500" "5710733" "5842200" "6011741" "6185704" "6201733" "6295592" "6356497" "6363502" "6430648").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2006/03/30 12:59
S25	15751267	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 16:26
S26	128	S25 and (flash same (operat\$9 with (parameter and frequency)))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/03/30 16:28
S27	2	"20020116589"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/03 14:55
S28	15752009	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/03 15:00
S29	180	S28 and ((memory with ((mobile portable) and (device module))) same (dram and ram))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/03 15:00

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S30	3	S29 and ((allocat\$9 and capacity) with memory)	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/03 16:12
S31	0	"64743836".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/03 16:12
S32	2	"6473836".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/03 16:13
S33	15766183	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 16:31
S34	26	S33 and royer-\$.in. and intel	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 16:39
S35	5	S34 and (allocat\$9 same (ram memory))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 17:12
S36	0	S34 and ((capaci\$5 with (avail\$9 check\$6)) same (ram memory))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 17:12
S37	7971	S33 and ((capaci\$5 with (avail\$9 check\$6)) same (ram memory))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 17:15
S38	1199	S37 and ((mobil\$9 wireless hand-held portabl\$5 PDA) with device)	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 09:52
S39	8	S38 and (((flash non-volatile) adj3 device) same (file and capacity))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:11
S40	2	S38 and (((flash non-volatile) adj3 device) same (file and (free adj4 space)))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:10
S41	36	S38 and (((flash non-volatile) adj3 device) same (capacity))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:20

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S42	0	S38 and (((flash non-volatile) adj3 device) same (full near5 check\$7))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:20
S43	0	S38 and (((flash non-volatile) adj3 device) same (fill near5 check\$7))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:20
S44	9	S38 and (((flash non-volatile) adj3 device) same (full))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:21
S45	1019	S38 and (memory with (full capaci\$9))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:23
S46	908	S38 and (memory with (availa\$9))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:23
S47	489	S46 and ((determi\$9 check\$9) same (availab\$9 and memory))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:24
S48	46	S47 and "711"/\$.ccls.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/20 18:24
S49	15766183	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 09:57
S50	7971	S49 and ((capaci\$5 with (avail\$9 check\$6)) same (ram memory))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 09:57
S51	1199	S50 and ((mobil\$9 wireless hand-held portabl\$5 PDA) with device)	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 09:57
S53	10	S51 and (optional and device and (stack\$9 near5 packag\$9))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 10:04
S54	0	S51 and ((multiple adj3 memory adj3 device) same packag\$9)	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 10:05

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S55	232	S51 and ((memory device) same packag\$9)	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 10:06
S56	21	S51 and ((memory device) same (packag\$9 and dram and non-volatile))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 10:07
S57	2	"6405270".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 10:28
S58	2	"6405278".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 10:28
S59	2	"6434663".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 10:57
S61	714	S49 and ((remov\$9 with (stora\$ memory device)) same (dram and non-volatile))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 11:00
S63	4	S61 and ((packag\$9 and device) same (dram and non-volatile))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 11:05
S64	39	S61 and (packag\$9 with device)	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 11:53
S65	448374	S49 and (package-on package)	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 11:57
S68	40	S49 and (package with ((nvram non-volatile) and dram))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/04/21 12:01
S69	15949983	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 12:09
S70	27379	S69 and "711"/\$.ccls.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 12:09

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S72	19	S70 and ((nand and nor) with interface)	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 12:51
S75	4	S70 and ((nvram with (interface convert\$8) same (dram and memory)))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:00
S76	67	S70 and (nvram with (interface convert\$8))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:00
S77	91698	S69 and (memory with (device and interface))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:09
S78	25631	S77 and ((memory with interface) same (ram dram ddr nvram))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:10
S79	360	S77 and ((memory with interface) same (ram and (ddr dram) and conver\$9))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:12
S80	103	S79 and ((portable PDA) with (memory device))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:44
S81	2663	S77 and ((portable PDA mobile) with (nonvolatile non\$1volatile nvram))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:48
S84	433	S81 AND ((RAM dram) with (interface protocol convert\$7))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:51
S85	28	S81 AND ((RAM dram) with ((interface protocol) and convert\$7))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 13:55
S86	34	S81 and (((ddr dram)with (protocol interface) same (memory device)))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 14:02
S87	2	"7093060".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 14:02

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S88	15949983	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 16:31
S89	21	S88 and ((controller and integrat\$4 and flash) same (nand and nor))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 15:59
S90	194	S88 and (dram same (ddr and convert\$8))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 16:38
S91	50	S88 and (dram with (ddr and convert\$8))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 17:22
S92	2	"20020112124"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 17:27
S93	0	"10431776".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 17:27
S94	0	"10431776"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 17:29
S95	3	"20040128594"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/01 17:30
S96	2	"7032105".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2006/12/02 14:29
S97	16010094	@ad < "20040402"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 08:44
S98	26	S97 and (PDA with (hierarch\$6 and memory))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 09:09
S10 0	1521	S97 and ((device module) with (hierarch\$6 adj6 memory))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 09:11

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S10 1	8	S97 and (((device module) with (hierarch\$6 adj6 memory)) same (ASIC))	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 09:24
S10 2	4	("7093153" "20050041473").pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 09:53
S10 3	2	"20050128322"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 11:36
S10 4	3	"20030163656"	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 13:40
S10 5	2	"7093153".pn.	US-PGPUB; USPAT; DERWENT; IBM_TDB	OR	ON	2007/04/12 13:43